SEQUENCE LISTING

<110> Kudoh, Masatake
Yamamoto, Hiroaki

<120> (R)-2-OCTANOL DEHYDROGENASES, METHODS FOR PRODUCING THE ENZYMES, DNA ENCODING THE ENZYMES, AND METHODS FOR PRODUCING ALCOHOLS USING THE ENZYMES

<130> 06501-090001

<140> 09/978,758
<141> 2001-10-16

<150> PCT/JP01/01082
<151> 2001-02-15

<150> JP 2000-374593
<151> 2000-12-08

<150> JP 2000-43506
<151> 2000-02-16

<160> 20

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 765
<212> DNA
<213> Pichia finlandica

<220>
<221> CDS
<222> (1)...(762)

<400> 1

```
atg tct tat aac ttc cat aac aag gtt gca gtt gtt act gga gct cta       48
Met Ser Tyr Asn Phe His Asn Lys Val Ala Val Val Thr Gly Ala Leu
 1               5                  10                  15

tca gga atc ggc tta agc gtc gca aaa aag ttc ctt cag ctc ggc gcc       96
Ser Gly Ile Gly Leu Ser Val Ala Lys Lys Phe Leu Gln Leu Gly Ala
            20                  25                  30

aaa gta acg atc tct gat gtc agt gga gag aaa aaa tat cac gag act      144
Lys Val Thr Ile Ser Asp Val Ser Gly Glu Lys Lys Tyr His Glu Thr
        35                  40                  45

gtt gtt gct ctg aaa gcc caa aat ctc aac act gac aac ctc cat tat      192
Val Val Ala Leu Lys Ala Gln Asn Leu Asn Thr Asp Asn Leu His Tyr
    50                  55                  60

gta cag gca gat tcc agc aaa gaa gaa gat aac aag aaa ttg att tcg      240
```

BEST AVAILABLE COPY

```
Val Gln Ala Asp Ser Ser Lys Glu Glu Asp Asn Lys Lys Leu Ile Ser
 65                  70                  75                  80

gaa act ctg gca acc ttt ggg ggc ctg gat att gtt tgt gct aat gca      288
Glu Thr Leu Ala Thr Phe Gly Gly Leu Asp Ile Val Cys Ala Asn Ala
                 85                  90                  95

gga att gga aag ttc gct ccc acc cat gaa aca ccc ttc gac gta tgg      336
Gly Ile Gly Lys Phe Ala Pro Thr His Glu Thr Pro Phe Asp Val Trp
            100                 105                 110

aag aag gtg att gct gtg aat ttg aat gga gta ttc tta ctg gat aag      384
Lys Lys Val Ile Ala Val Asn Leu Asn Gly Val Phe Leu Leu Asp Lys
        115                 120                 125

cta gcc atc aat tac tgg cta gag aaa agc aaa ccc ggc gta att gtc      432
Leu Ala Ile Asn Tyr Trp Leu Glu Lys Ser Lys Pro Gly Val Ile Val
    130                 135                 140

aac atg gga tca gtc cac tct ttt gta gca gct cct ggc ctt gcg cat      480
Asn Met Gly Ser Val His Ser Phe Val Ala Ala Pro Gly Leu Ala His
145                 150                 155                 160

tat gga gct gca aaa ggc ggt gtc aaa ctg tta aca caa aca ttg gct      528
Tyr Gly Ala Ala Lys Gly Gly Val Lys Leu Leu Thr Gln Thr Leu Ala
                165                 170                 175

cta gag tac gca tct cat ggt att aga gta aat tct gtc aat ccg ggg      576
Leu Glu Tyr Ala Ser His Gly Ile Arg Val Asn Ser Val Asn Pro Gly
            180                 185                 190

tac att tcg act cct ttg ata gat gag gtt ccg aaa gag cgg ttg gat      624
Tyr Ile Ser Thr Pro Leu Ile Asp Glu Val Pro Lys Glu Arg Leu Asp
        195                 200                 205

aaa ctt gta agc ttg cac cct att ggg aga cta ggt cgt cca gag gaa      672
Lys Leu Val Ser Leu His Pro Ile Gly Arg Leu Gly Arg Pro Glu Glu
    210                 215                 220

gtt gct gat gca gtc gca ttt ctg tgt tcc cag gag gcc act ttc atc      720
Val Ala Asp Ala Val Ala Phe Leu Cys Ser Gln Glu Ala Thr Phe Ile
225                 230                 235                 240

aac ggc gtt tct ttg ccg gtt gac ggg ggg tac aca gcc cag taa          765
Asn Gly Val Ser Leu Pro Val Asp Gly Gly Tyr Thr Ala Gln
                245                 250
```

<210> 2
<211> 254
<212> PRT
<213> Pichia finlandica

<400> 2

```
Met Ser Tyr Asn Phe His Asn Lys Val Ala Val Val Thr Gly Ala Leu
 1               5                  10                  15
Ser Gly Ile Gly Leu Ser Val Ala Lys Lys Phe Leu Gln Leu Gly Ala
```

BEST AVAILABLE COPY

```
            20                  25                  30
Lys Val Thr Ile Ser Asp Val Ser Gly Glu Lys Lys Tyr His Glu Thr
        35                  40                  45
Val Val Ala Leu Lys Ala Gln Asn Leu Asn Thr Asp Asn Leu His Tyr
    50                  55                  60
Val Gln Ala Asp Ser Ser Lys Glu Glu Asp Asn Lys Lys Leu Ile Ser
65                  70                  75                  80
Glu Thr Leu Ala Thr Phe Gly Gly Leu Asp Ile Val Cys Ala Asn Ala
                85                  90                  95
Gly Ile Gly Lys Phe Ala Pro Thr His Glu Thr Pro Phe Asp Val Trp
            100                 105                 110
Lys Lys Val Ile Ala Val Asn Leu Asn Gly Val Phe Leu Leu Asp Lys
        115                 120                 125
Leu Ala Ile Asn Tyr Trp Leu Glu Lys Ser Lys Pro Gly Val Ile Val
    130                 135                 140
Asn Met Gly Ser Val His Ser Phe Val Ala Ala Pro Gly Leu Ala His
145                 150                 155                 160
Tyr Gly Ala Ala Lys Gly Gly Val Lys Leu Leu Thr Gln Thr Leu Ala
                165                 170                 175
Leu Glu Tyr Ala Ser His Gly Ile Arg Val Asn Ser Val Asn Pro Gly
            180                 185                 190
Tyr Ile Ser Thr Pro Leu Ile Asp Glu Val Pro Lys Glu Arg Leu Asp
        195                 200                 205
Lys Leu Val Ser Leu His Pro Ile Gly Arg Leu Gly Arg Pro Glu Glu
    210                 215                 220
Val Ala Asp Ala Val Ala Phe Leu Cys Ser Gln Glu Ala Thr Phe Ile
225                 230                 235                 240
Asn Gly Val Ser Leu Pro Val Asp Gly Gly Tyr Thr Ala Gln
                245                 250
```

<210> 3
<211> 10
<212> PRT
<213> Pichia finlandica

<400> 3
```
Val Ala Val Val Thr Gly Ala Leu Ser Gly
 1               5                  10
```

<210> 4
<211> 12
<212> PRT
<213> Pichia finlandica

<400> 4
```
Leu Ile Ser Glu Thr Leu Ala Thr Phe Gly Gly Leu
 1               5                  10
```

<210> 5
<211> 10
<212> PRT
<213> Pichia finlandica

<400> 5
```
Leu Gly Arg Pro Glu Glu Val Ala Asp Ala
 1               5                  10
```

BEST AVAILABLE COPY

<210> 6
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Artificially synthesized primer sequence

<221> misc_feature
<222> (1)...(9)
<223> BamHI site

<400> 6
gtcggatccg tbgchgtbgt bachgghgc 29

<210> 7
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Artificially synthesized primer sequence

<221> misc_feature
<222> (1)...(9)
<223> BamHI site

<221> misc_feature
<222> 15, 18, 27
<223> n = a, c, t or g

<400> 7
gtcggatccg crtcngcnac ytcytcngg 29

<210> 8
<211> 623
<212> DNA
<213> Pichia finlandica

<400> 8
gctctatcag gaatcggctt aagcgtcgca aaaaagttcc ttcagctcgg cgccaaagta 60
acgatctctg atgtcagtgg agagaaaaaa tatcacgaga ctgttgttgc tctgaaagcc 120
caaaatctca acactgacaa cctccattat gtacaggcag attccagcaa agaagaagat 180
aacaagaaat tgatttcgga aactctggca acctttgggg gcctggatat tgtttgtgct 240
aatgcaggaa ttggaaagtt cgctcccacc catgaaacac ccttcgacgt atggaagaag 300
gtgattgctg tgaatttgaa tggagtattc ttactggata agctagccat caattactgg 360
ctagagaaaa gcaaacccgg cgtaattgtc aacatgggat cagtccactc ttttgtagca 420
gctcctggcc ttgcgcatta tggagctgca aaaggcggtg tcaaactgtt aacacaaaca 480
ttggctctag agtacgcatc tcatggtatt agagtaaatt ctgtcaatcc ggggtacatt 540
tcgactcctt tgatagatga ggttccgaaa gagcggttgg ataaacttgt aagcttgcac 600
cctattggga gactaggtcg tcc 623

<210> 9
<211> 29
<212> DNA
<213> Artificial Sequence

BEST AVAILABLE COPY

<220>
<223> Artificially synthesized primer sequence

<221> misc_feature
<222> (1)...(9)
<223> BamHI site

<400> 9
gtcggatcct cagagatcgt tactttggc 29

<210> 10
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Artificially synthesized primer sequence

<221> misc_feature
<222> (1)...(9)
<223> BamHI site

<400> 10
gtcggatccc gactcctttg atagatgag 29

<210> 11
<211> 599
<212> DNA
<213> Pichia finlandica

<400> 11
tgggctgaac ctggctgtgc tactgggcag agcaaaatca gatagaagag cttgtgtttt 60
tgtagcaccc ctctttttt ttgaaattct ctacagctca attacctgtt cacattcaat 120
acagagtact atcttttcga tttcttatca gataagcaat tgacaatatt agtagcacct 180
gatgcacttt tcgagaacac acctgagtac aaaacaatat atatcattat attagaacag 240
tgacattgag aacaattttc cagcatataa tgtaattagg tgcatcaaca accaggaaaa 300
acacctgatt aaaaaatccg gatattaaga atcatgaaac aaaattcaat gttaccctac 360
ccattccttc tcggaacctc ctgatgactt attaatagtg aggttgttcc gataaaaatc 420
gcgaatttct ccattccata aattctccta taacttggct tactatacac acacactatt 480
atcgatatgt cttataactt ccataacaag gttgcagttg ttactggagc tctatcagga 540
atcggcttaa gcgtcgcaaa aaagttcctt cagctcggcg ccaaagtaac gatctctga 599

<210> 12
<211> 581
<212> DNA
<213> Pichia finlandica

<400> 12
cgactccttt gatagatgag gttccgaaag agcggttgga taaacttgta agcttgcacc 60
ctattgggag actaggtcgt ccagaggaag ttgctgatgc agtcgcattt ctgtgttccc 120
aggaggccac tttcatcaac ggcgtttctt tgccggttga cgggggtac acagcccagt 180
aaattggaca ctttttgctc tttattatct tccccgcgtt tcaccaatta tccggtgtac 240
gtaggttgca gtgactttct ggtttctgca cttgaatgaa actctctttt accccacaaa 300
atcagctcag taaattatct tgtgtatata taaataagac agaaaccctg tggactccta 360
gtatggtgtt ctactttcat taaggcagtc acaaaagcaa tggcgaaatc aactgatgga 420
aagatagtta cactggagga gcaggcctac aatggcccac ccgcacggat cataggagaa 480
gctatcgcca ttaaagcgaa gctggctgcc aatcggacac tcccagttaa gtttgaaaga 540

BEST AVAILABLE COPY

aagcgtggtc ttcaaccacc accagggatg tctagacaag a 581

<210> 13
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Artificially synthesized primer sequence

<400> 13
tcgacatgtc ttataatttc cataacaag 29

<210> 14
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Artificially synthesized primer sequence

<400> 14
gcagaattcc tctagattac tgggctgtgt accc 34

<210> 15
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Artificially synthesized primer sequence

<400> 15
cacgaattct aaaatgtctt ataatttcca taacaag 37

<210> 16
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Artificially synthesized primer sequence

<400> 16
agtactagta ttactgggct gtgtaccc 28

<210> 17
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Artificially synthesized primer sequence

<400> 17
agaccatgga tccaatgtat ccagatttaa aaggaa 36

BEST AVAILABLE COPY

<210> 18
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Artificially synthesized primer sequence

<400> 18
gaatctagat taaccgcggc ctgcctg 27

<210> 19
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> Artificially synthesized primer sequence

<400> 19
ctttctagag gaattcaacc atggcaaaag ttctgtgtgt tc 42

<210> 20
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Artificially synthesized primer sequence

<400> 20
cagtctagat tagaccgctt ttttgaattt ggcg 34

BEST AVAILABLE COPY